

Pratue Test - Finance

1. Answers in textbook Q#6 p 460

$$2. A = 2000(1 + 0.065/1)^5 \\ = 2740.17$$

$$I = Prt \\ = 2000(0.07)(5) \\ = 700$$

$$A = I + P \\ = 700 + 2000 \\ = 2700$$

a) The GIC compounded annually earns more interest

$$b) = 2740.17 - 2700 \\ = 40.17$$

3. Answers in textbook Q#2 p 468

$$4. 500 = 350(1 + i)^3$$

$$\frac{500}{350} = \frac{350(1 + i)^3}{350}$$

$$1.428 = (1 + i)^3$$

$$\sqrt[3]{1.428} = 1 + i$$

$$1.1262 = 1 + i$$

$$i = 0.1262$$

∴ the annual interest rate is 12.62%

$$5. = 15000 \div 3 \\ = 5000 \text{ each}$$

$$5000 = P \left(1 + \frac{0.06}{2} \right)^{20}$$

$$P = \frac{5000}{\left(1 + \frac{0.06}{2} \right)^{20}}$$

$$P = 2768.38$$

∴ each person has to contribute
\$ 2768.38

$$6. 3350 = P \left(1 + \frac{0.0525}{12} \right)^{36}$$

$$P = \frac{3350}{\left(1 + \frac{0.0525}{12} \right)^{36}}$$

$$P = 2862.81$$

∴ Jason borrowed \$ 2862.81

$$7. 5000 = P \left(1 + \frac{0.035}{12} \right)^{48} \quad \text{OR} \quad 5000 = P \left(1 + \frac{0.034}{2} \right)^8$$

$$P = \frac{5000}{\left(1 + \frac{0.035}{12} \right)^{48}}$$

$$= 4347.68$$

$$P = \frac{5000}{\left(1 + \frac{0.034}{2} \right)^8}$$

$$= 4369.20$$

∴ Marshall should invest in the
savings account because its principal
is less.

$$8. \quad 3 = 1 \left(1 + \frac{0.10}{12}\right)^n$$

$$3 = \left(1 + \frac{0.10}{12}\right)^n$$

$$3 = (1.00833)^n$$

$$n = \frac{\log 3}{\log 1.00833}$$

$$n = 132 \div 12$$

$$= 11.03 \text{ years}$$

$$9. \quad 40\,000 = 20\,000 (1 + i)^{20}$$

$$2 = (1 + i)^{20}$$

$$\sqrt[20]{2} = (1 + i)$$

$$1.03526 = 1 + i$$

$$i = 0.03526 \times 4 \times 100$$

$$i = 14.1\%$$

∴ it will take 11.03 years

∴ 14.1% interest is needed.

$$10. \quad A = \frac{R \left((1+i)^n - 1 \right)}{i}$$

$$= \frac{250 \left[\left(1 + \frac{0.115}{4} \right)^{140} - 1 \right]}{0.115/4}$$

$$= 451\,222.88$$

a) ∴ the RRSP will be worth \$451 222.88 at maturity.

$$b) = 451\,222.88 - (250 \times 4 \times 35)$$

$$= 416\,222.88$$

∴ \$416 222.88 will be interest.

$$11. \quad A = \frac{25 \left(\left(1 + \frac{0.096}{12} \right)^{48} - 1 \right)}{0.096/12}$$

$$= 1455.95$$

$$A = 1455.95 \left(1 + \frac{0.096}{12} \right)^{120}$$

$$= 3788.00$$

∴ the balance after 10 years is \$3788.00

$$12. \quad A = \frac{750 \left(1 - \left(1 + \frac{0.04}{1} \right)^{-3} \right)}{0.04/1}$$

$$= 2081.32$$

∴ she will need
\$2081.32 now to
pay for the books

$$13. a) \quad 22000 = \frac{R \left(1 - \left(1 + \frac{0.024}{12} \right)^{-60} \right)}{0.024/12}$$

$$44 = R \left(1 - \left(1 + \frac{0.024}{12} \right)^{-60} \right)$$

$$\frac{44}{0.1129732} = \frac{0.112973268 R}{0.112973268}$$

$$R = 389.47$$

∴ the monthly payments will be \$389.47 for
the second option.

b) \$23368.20 will be the total cost. $[389.47 \times 12 \times 5]$

$$c) \quad 20000 = \frac{R \left(1 - \left(1 + \frac{0.06}{12} \right)^{-60} \right)}{0.06/12}$$

$$100 = R \left(1 - \left(1 + \frac{0.06}{12} \right)^{-60} \right)$$

$$\frac{100}{0.258627804} = \frac{0.258627804 R}{0.258627804}$$

$$R = 386.66$$

∴ Shimon should
borrow the money
from the bank.